

इंटरनेट

मानक

Disclosure to Promote the Right To Information

Whereas the Parliament of India has set out to provide a practical regime of right to information for citizens to secure access to information under the control of public authorities, in order to promote transparency and accountability in the working of every public authority, and whereas the attached publication of the Bureau of Indian Standards is of particular interest to the public, particularly disadvantaged communities and those engaged in the pursuit of education and knowledge, the attached public safety standard is made available to promote the timely dissemination of this information in an accurate manner to the public.

“जानने का अधिकार, जीने का अधिकार”

Mazdoor Kisan Shakti Sangathan

“The Right to Information, The Right to Live”

“पुराने को छोड़ नये के तरफ”

Jawaharlal Nehru

“Step Out From the Old to the New”

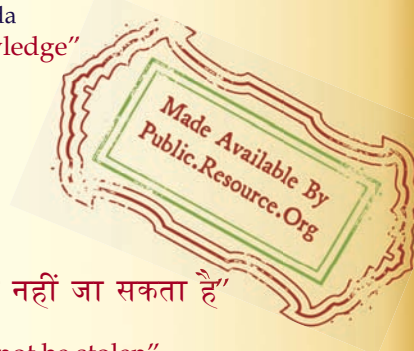
IS 5081 (1990): Glass Tubes for Tubular Fluorescent Lamps
for General Lighting Service [CHD 10: Glassware]



“ज्ञान से एक नये भारत का निर्माण”

Satyanarayan Gangaram Pitroda

“Invent a New India Using Knowledge”



“ज्ञान एक ऐसा खजाना है जो कभी चुराया नहीं जा सकता है”

Bhartrhari—Nitiśatakam

“Knowledge is such a treasure which cannot be stolen”

BLANK PAGE



Indian Standard

**GLASS TUBES FOR TUBULAR
FLUORESCENT LAMPS FOR GENERAL
LIGHTING SERVICE — SPECIFICATION**

(First Revision)

भारतीय मानक

**सामान्य प्रकाश-सेवा के लिए नलिकाकार प्रतिदीप्ति लैम्पों की
काँच-ट्यूबें — विशिष्टि**

(पहला पुनरीक्षण)

UDC 666.175.6 : 621.32

© BIS 1990

**BUREAU OF INDIAN STANDARDS
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI 110002**

FOREWORD

This Indian Standard (First Revision) was adopted by the Bureau of Indian Standards on 31 January 1990, after the draft finalized by the Glassware Sectional Committee had been approved by the Chemical Division Council.

This standard was first published in 1969 to cover the requirements of glass tubes for fluorescent lamps of 20, 40 and 80 watts. This revision has been taken up to remain in step with the requirements of revised IS 2418 (Part 1 and 2) : 1977 'Specification for tubular fluorescent lamps for general lighting service : Part 1 Requirements and tests and Part 2 Standard lamp data sheets (first revision).'

In this revision, the title has been aligned with that of IS : 2418 and coverage has been extended to glass tubes for 4 to 80 watt lamp rating. The tolerance on length, wall thickness, and ovality have also been modified. Weathering in storages test has been deleted and sampling procedure has been revised.

For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS 2 : 1960 'Rules for rounding off numerical values (revised)'. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

Indian Standard

GLASS TUBES FOR TUBULAR FLUORESCENT LAMPS FOR GENERAL LIGHTING SERVICE — SPECIFICATION

(First Revision)

1 SCOPE

This standard prescribes the requirements and methods of sampling and test for glass tubes for 4W to 80W, tubular fluorescent lamps for general lighting service.

2 REFERENCES

The following Indian Standards are necessary adjuncts to this standard.

<i>IS No.</i>	<i>Title</i>
1382 : 1981	Glossary of terms relating to glass and glassware (<i>first revision</i>)
4905 : 1968	Methods for random sampling.

3 TERMINOLOGY

3.1 For the purpose of this standard, the definitions given in IS 1382 : 1981 in addition to the following shall apply.

3.2 Seaminess

It is the difference between the largest and the smallest wall thickness in any section of the tube perpendicular to the longitudinal axis.

4 REQUIREMENTS

4.1 Dimensions and Tolerance

4.1.1 Length

The length of the tubes shall be as agreed to between the purchaser and the supplier.

4.1.1.1 The tolerance of the agreed length of tubes shall be not more than ± 3 mm.

4.1.2 Nominal Diameter

The nominal diameter of the glass tube shall be 15, 26 and 37 mm depending upon the lamp rating.

4.1.2.1 The tolerance on nominal diameter shall be as follows:

<i>Nominal Diameter</i>	<i>Tolerance on Diameter</i>
mm	mm
15	± 0.6
26	$+0.5$ -1.0
37	± 1.0

4.1.3 Wall Thickness

The wall thickness of the tubes shall be between 0.65 and 0.95 mm. The measurement of wall thickness shall be done as specified in Annex A with the measuring device shown in Fig. 1.

4.1.4 Ovality

The ovality shall be not more than 2.0 percent of the largest diameter of the tube but still within the tolerance of diameter.

4.1.5 Seaminess

The seaminess at any section of the tube shall be not more than 0.15 mm.

4.1.6 Bow

The bow shall be not more than 2.0 mm per metre length of the tube on a single throw basis (see Fig. 2). The method for bow measurement is given in Annex B.

4.2 Workmanship and Finish

4.2.1 Stones and Knots

The tubes shall be free from metallic particles and stones not fully covered with glass. Stones fully covered with glass and not exceeding 0.5 mm in diameter may be ignored if they are not in the sealing zone of the tube. Those having a diameter exceeding 1 mm shall not be permissible.

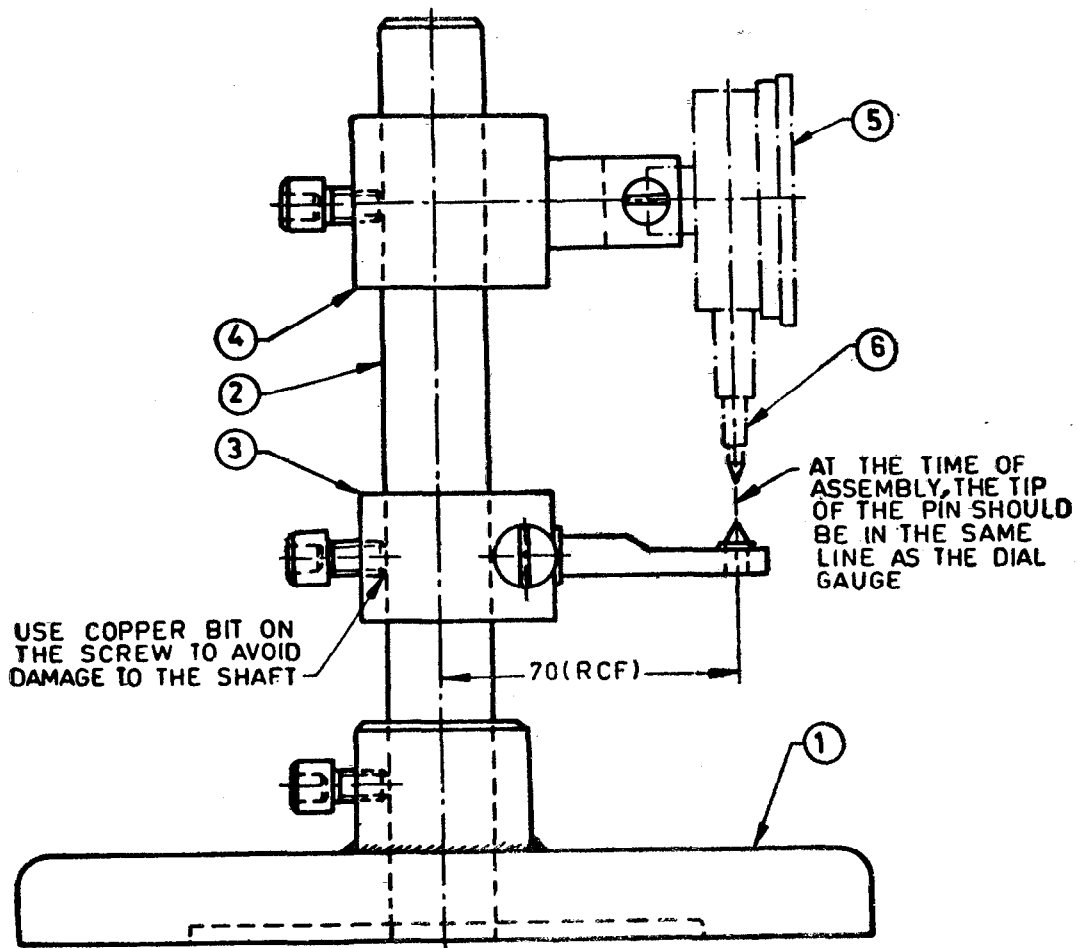


FIG. 1 WALL THICKNESS MEASURING DEVICE

4.2.1.1 The number of stones and knots between 0.5 and 1 mm in diameter per tube shall be not more than 2 up to a length of 300 mm, 3 up to a length 600 mm and 4 up to a length of 1 500 mm.

4.2.2 Cords and Striae

The tubes having cords and striae which are not palpable shall be accepted.

4.2.3 Air Lines

The tubes having open air lines on the outside shall not be accepted. Closed air lines which may not be detrimental to lamp performance may be allowed.

4.2.4 Checks of Cracks

The tubes shall be free from checks or cracks, such as 'fissures' into or through the wall.

4.2.5 Adhered Glass

For a piece of glass or small foreign particle welded to the tube surface which cannot be removed without causing a chip or chack, the maximum acceptable size shall be 0.5 mm.

4.2.6 Glazing

The edges of the tubes shall be evenly glazed and fire polished.

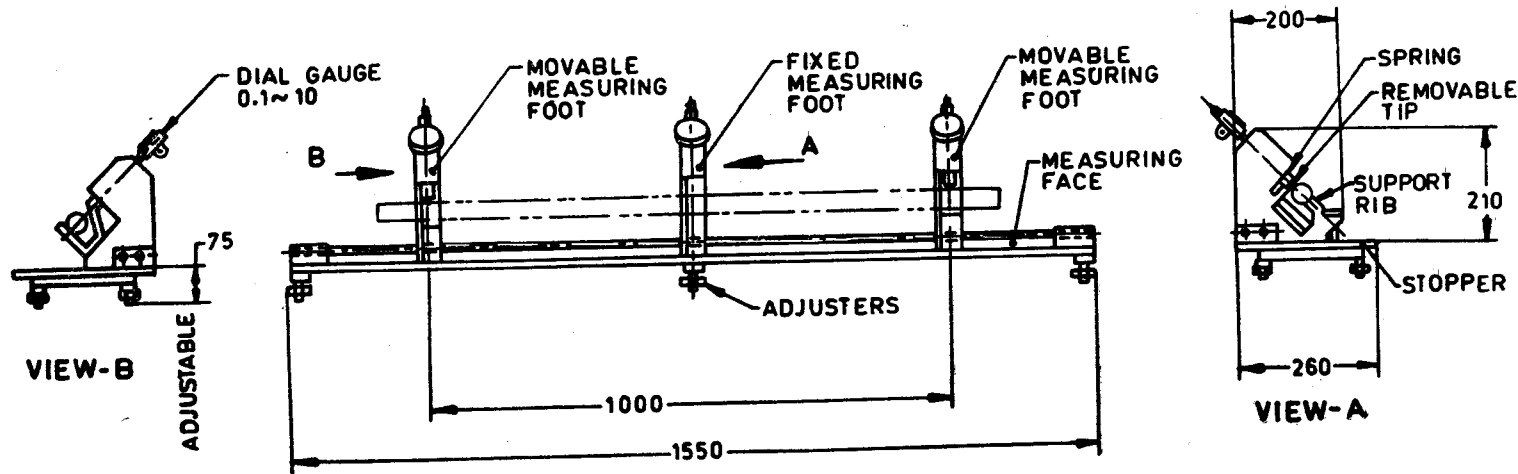
4.3 Annealing

4.3.1 The tubes shall be reasonably free from strain. The strain may be checked by a polariscope.

5 PACKING AND MARKING

5.1 Packing

The tubes shall be packed as agreed to between the purchaser and the supplier.



All dimensions in millimetres.

FIG. 2 APPARATUS FOR MEASURING BOW OF GLASS TUBE

5.2 Marking

All packages shall be marked clearly, and legibly indicating the following information;

- a) Name of the item,
- b) Overall length,
- c) Number of tubes in the package,
- d) Indication of the source of manufacture,
- e) Lot number to enable the batch of manufacture to be traced from records, and
- f) Month and year of manufacture.

6 SAMPLING

6.1 Lot

For the purpose of this standard, all the glass tubes meant for tubular fluorescent lamps of the same nominal dimension and the same wattage shall constitute a lot. Each lot shall be separately inspected for testing conformity to this specification.

6.2 Sampling and Criteria for Conformity

The number of glass tubes to be sampled from each lot is given in Table 1. The sample shall be drawn by the method of random selection prescribed in IS 4905 : 1968.

6.2.1 The sample glass tubes selected in accordance with col 2 of Table 1. Shall be examined for the characteristics covered under workmanship and finish (4.2); and (4.3) annealing.

A glass tube failing in one or more of the requirements of 4.2 and 4.3 shall be termed an defective.

The lot shall be accepted as conforming to the specification if the total number of defective is less than or equal the acceptance number given in col 3.

6.2.2 The sample glass tubes selected in accordance with col 4 of the Table 1, shall be examined for dimensional requirements specified in 4.1.

A glass tube failing in one or more of the requirements of 4.1 shall be termed and defective.

The lot shall be accepted as conforming to the specification if the number of defectives is less than or equal to the acceptance number given in col 5 of Table 1.

Table 1 Scale of Sampling
(Clauses 6.2, 6.2.1 and 6.2.2)

Lot Size	For Clause 4.2 and 4.3		For Clause 4.1	
	Sample Size	Acceptance No.	Sample Size	Acceptance No.
(N)	(n)		(n)	
(1)	(2)	(3)	(4)	(5)
Up to 25	5	0	3	0
26 to 50	8	1	5	0
51 to 100	13	1	5	0
101 to 150	20	2	8	0
151 to 300	32	3	13	1
301 to 500	50	5	20	1
501 to 1 000	80	7	32	2
1 001 to 3 000	125	10	50	3
3 001 to 10 000	200	14	80	5
10 001 and above	315	21	125	7

ANNEX A

(Clause 4.1.3)

MEASUREMENT OF WALL THICKNESS

A-0 GENERAL

The measurement of wall thickness of a tubular fluorescent lamp is done by using the wall thickness measuring device. With the help of this device, the wall thickness can be gauged on every spot of the circumference of the tube within 16 mm from the end.

A-1 APPARATUS

An illustration of the wall thickness measuring device is given in Fig. 1.

The device consists of a round steel base plate (1) on which a shaft (2) is mounted at right angles to the base plate, stop (3) and holder (4) are mounted on shaft (2). They can be adjusted

along shaft (2). Gauging dial (5) is fitted to holder (4). A gauging peg (6) is attached to the gauging dial (5). The accuracy and range of the device is 0.01 mm and 0-10 mm.

A-2 PROCEDURE

Firstly, the gauging dial shall indicate (0). Then the tube, the thickness of which is to be measured shall be placed between the gauging peg and the stop. The wall thickness of the tube between the stop and the gauging peg can be read from the gauging dial. By moving the tube between the peg and stop, the wall thickness can be gauged on every spot of the circumference of the tube within 16 mm from the end.

ANNEX B

(Clause 4.1.6)

MEASUREMENT OF BOW OF GLASS TUBES

B-1 APPARATUS

B-1.1 The apparatus consists of a flat plate (measuring face) provided with adjusters to place the apparatus horizontally. One fixed and two movable measuring feet are fixed on this plate. The fixed measuring foot is provided with a measuring pin with dial gauge to measure the bow of tubes. The two movable measuring feet are provided with a support rib. These can also be provided with measuring pins and dial gauge for measurement of tube diameter at both ends. The measuring face is provided with a scale and the movable feet with a stop piece to be able to check

the bow of the tubes (not shown in the figure).

B-2 PROCEDURE

B-2.1 The tubes to be measured for bow shall be placed horizontally on to the two support ribs so that the measuring pin of the fixed support rests on the outside wall of the tube. By turning the tube through 360°, the measuring pin is moved up and down in vertical direction due to deviations on the straightness of the tube. From the observed deviation (that is maximum and minimum reading on the dial gauge), the bow can be determined.

Standard Mark

The use of the Standard Mark is governed by the provisions of the *Bureau of Indian Standards Act, 1986* and the Rules and Regulations made thereunder. The Standard Mark on products covered by an Indian Standard conveys the assurance that they have been produced to comply with the requirements of that standard under a well defined system of inspection, testing and quality control which is devised and supervised by BIS and operated by the producer. Standard marked products are also continuously checked by BIS for conformity to that standard as a further safeguard. Details of conditions under which a licence for the use of the Standard Mark may be granted to manufacturers or producers may be obtained from the Bureau of Indian Standards.

Bureau of Indian Standards

BIS is a statutory institution established under the *Bureau of Indian Standards Act, 1986* to promote harmonious development of the activities of standardization, marking and quality certification of goods and attending to connected matters in the country.

Copyright

BIS has the copyright of all its publications. No part of these publications may be reproduced in any form without the prior permission in writing of BIS. This does not preclude the free use, in the course of implementing the standard, of necessary details, such as symbols and sizes, type or grade designations. Enquiries relating to copyright be addressed to the Director (Publications), BIS.

Revision of Indian Standards

Indian Standards are reviewed periodically and revised, when necessary and amendments, if any, are issued from time to time. Users of Indian Standards should ascertain that they are in possession of the latest amendments or edition. Comments on this Indian Standard may be sent to BIS giving the following reference:

Doc : No. CHD 10 (9487)

Amendments Issued Since Publication

Amend No.	Date of Issue	Text Affected

BUREAU OF INDIAN STANDARDS

Headquarters :

Manak Bhavan, 9 Bahadur Shah Zafar Marg, New Delhi 110002
Telephones : 331 01 31, 331 13 75

Telegrams : Manaksanstha
(Common to all Offices)

Regional Offices :

Telephone

Central : Manak Bhavan, 9 Bahadur Shah Zafar Marg
NEW DELHI 110002

{ 331 01 31
{ 331 13 75

Eastern : 1/14 C. I. T. Scheme VII M, V. I. P. Road, Maniktola
CALCUTTA 700054

37 86 62

Northern : SCO 445-446, Sector 35-C, CHANDIGARH 160036

2 18 43

Southern : C. I. T. Campus, IV Cross Road, MADRAS 600113

41 29 16

Western : Manakalaya, E9 MIDC, Marol, Andheri (East)
BOMBAY 400093

6 32 92 95

Branches : AHMADABAD. BANGALORE. BHOPAL. BHUBANESHWAR. COIMBATORE.
FARIDABAD. GHAZIABAD. GUWAHATI. HYDERABAD. JAIPUR. KANPUR.
PATNA. THIRUVANANTHAPURAM